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REMARKS/ARGUMENTS

Claims 1 and 3-10, 21, 22 and 24-28 are pending in this application. By this amendment, Applicants amend claims 1 and 21.

Claims 1, 3, 4, 7-10, 21, 22 and 24-26 were rejected under 35 U.S.C. §102(b) as being anticipated by Camp (U.S. 5,726,623), or in the alternative, under 35 U.S.C. § 103(a) as being obvious over Camp in view of Becker et al. (U.S. 2,418,461). Claims 1, 3, 4, 7-10, 21, 22 and 24-26 were rejected under U.S.C. § 103(a) as being unpatentable over Rehneit (U.S. 6,232,868) in view of Camp and Becker et al. Claims 5 and 27 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Camp, or Rehneit with Camp, and further in view of Nagao et al. (U.S. 5,939,972). Claims 6 and 28 were rejected under U.S.C. §103(a) as being unpatentable over Camp, or Rehneit with Camp, and further in view of Ikeda et al. (U.S. 6,147,330). Applicants respectfully traverse the rejections of claims 1 and 3-10, 21, 22 and 24-29.

Claim 1 has been amended to recite:

"A surface-mountable PTC thermistor element comprising:
a thermistor element body including a top surface and a bottom surface;

electrodes disposed on the top surface and the bottom surface of the thermistor element body;

lower and upper terminals arranged such that each of the electrodes is connected with a respective one of the lower and upper terminals, and each of the lower and upper terminals is extended downward; wherein

said lower terminal includes a junction portion, a short vertical-leg portion bent vertically in a downward direction at an angle of 90° relative to the surface of said thermistor element body such that the short vertical-leg portion extends perpendicular to the surface of the thermistor element body, and a lower-end portion which extends parallel to the junction portion and perpendicular to the short vertical-leg portion;

said short vertical-leg portion is directly connected and extends directly between the junction portion and the lower-end portion;

the junction portion of the lower terminal is mechanically attached to one of the electrodes;

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the upper and lower terminals contact only the electrodes on the top and bottom surfaces of the thermistor element body and a mounting surface when the surface-mountable PTC thermistor element is mounted on the mounting surface;

the lower-end portion of the lower terminal is disposed in contact with the mounting surface when the surface-mountable PTC thermistor element is mounted on the mounting surface; and

said vertical-leg portion of the lower terminal is located closer to the center of the thermistor element body than to a periphery of the thermistor element body so as to be spaced inwardly from the periphery of the thermistor element body." (emphasis added)

Claim 21 recites:

"A surface-mountable PTC thermistor element comprising:
a thermistor element body including a top surface and a bottom surface;

electrodes disposed on the top surface and the bottom surface of the thermistor element body;

lower and upper terminals arranged such that each of the electrodes is connected with a respective one of the lower and upper terminals, and each of the lower and upper terminals is extended downward; wherein

said upper terminal includes a junction portion contacting the electrode located on the top surface of the thermistor element body, and a vertical-leg portion extending perpendicularly from an end of the junction portion;

said lower terminal includes a junction portion contacting the electrode located on the bottom surface of the thermistor element body, and a vertical-leg portion extending perpendicularly from an end of the junction portion of said lower terminal;

said vertical-leg portion of said upper terminal is longer than said vertical-leg portion of said lower terminal;

said vertical-leg portion of the lower terminal is located closer to the center of the thermistor element body than to a periphery of the thermistor element body so as to be spaced inwardly from the periphery of the thermistor element body;

a lower end of said vertical-leg portion of said upper terminal is located in a common plane with a lower end of said vertical-leg portion of said lower terminal, the common plane being parallel to said top and bottom surfaces of the thermistor element body and arranged to be located at a mounting surface of a substrate upon

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which the surface-mountable PTC thermistor element is mounted;
said junction portion of said upper terminal and said junction portion
of said lower terminal overlap with each other at a central portion of said
thermistor element body with the thermistor element body disposed
therebetween; and
the upper and lower terminals contact only the electrodes on the
upper and lower surfaces of the thermistor element body and the
mounting surface when the surface mountable PTC thermistor element is
mounted on the mounting surface." (emphasis added)

The Examiner alleged that Camp, or alternatively, Camp in view of Becker et al. teach all of the features recited in Applicants' claims 1 and 21, and that Rehneft in view of Camp and Becker et al. teach all of the features recited in Applicants' claim 1 and 21. Applicants respectfully disagree.

Claim 1 recites the features of "a short vertical-leg portion bent vertically in a downward direction at an angle of 90° relative to the surface of said thermistor element body such that the short vertical-leg portion extends perpendicular to the surface of the thermistor element body, and a lower-end portion which extends parallel to the junction portion and perpendicular to the short vertical-leg portion," "the lower-end portion of the lower terminal is disposed in contact with the mounting surface when the surface-mountable PTC thermistor element is mounted on the mounting surface" and "said vertical-leg portion of the lower terminal is located closer to the center of the thermistor element body than to a periphery of the thermistor element body so as to be spaced inwardly from the periphery of the thermistor element body."

Claim 21 recites the features of "said lower terminal includes a junction portion contacting the electrode located on the bottom surface of the thermistor element body, and a vertical-leg portion extending perpendicularly from an end of the junction portion of said lower terminal," "said vertical-leg portion of the lower terminal is located closer to the center of the thermistor element body than to a periphery of the thermistor element body so as to be spaced inwardly from the periphery of the thermistor element body" and "a lower end of said vertical-leg portion of said upper terminal is located in a

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common plane with a lower end of said vertical-leg portion of said lower terminal, the common plane being parallel to said top and bottom surfaces of the thermistor element body and arranged to be located at a mounting surface of a substrate upon which the surface-mountable PTC thermistor element is mounted."

The Examiner alleged that Camp teaches vertical-leg portions "on one or both of the legs of the U shaped channel portion," and a lower end portion that "is the middle horizontal portion of the U" as shown in Figs. 2 and 4 of Camp. However, the middle horizontal portion of the U of Camp, as seen in Fig. 2 and 4 of Camp is clearly not disposed in contact with the mounting surface when the thermistor 10 is mounted on the mounting surface. In contrast, the middle horizontal portion of the U of Camp is disposed substantially above the mounting surface, and instead, the contact pad 15 is disposed in contact with the mounting surface. Thus, Camp certainly fails to teach or suggest the features of "the lower-end portion of the lower terminal is disposed in contact with the mounting surface when the surface-mountable PTC thermistor element is mounted on the mounting surface" and "said vertical-leg portion of the lower terminal is located closer to the center of the thermistor element body than to a periphery of the thermistor element body so as to be spaced inwardly from the periphery of the thermistor element body" as recited in Applicants' claim 1.

Furthermore, the lower ends of vertical-leg portions on one or both sides of the U shaped channel portion of Camp are clearly not arranged to be located at a mounting surface of a substrate upon which the thermistor is mounted. As noted above, the lower ends of the vertical-leg portions on one or both sides of the U shaped channel portion of Camp are disposed substantially above the mounting surface. Thus, Camp certainly fails to teach or suggest the features of "said vertical-leg portion of the lower terminal is located closer to the center of the thermistor element body than to a periphery of the thermistor element body so as to be spaced inwardly from the periphery of the thermistor element body" and "a lower end of said vertical-leg portion of said upper terminal is located in a common plane with a lower end of said vertical-leg portion of

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said lower terminal, the common plane being parallel to said top and bottom surfaces of the thermistor element body and arranged to be located at a mounting surface of a substrate upon which the surface-mountable PTC thermistor element is mounted" as recited in Applicants' claim 21.

The Examiner further alleged that Becker et al. "discloses a bent vertical portion in the vicinity of the center at the sole figure, as typical in the thermistor arts in order to ensure securing terminals to a thermistor like that of Camp, so that such an arrangement would have been obvious, where for example, the terminals are made to accommodate larger thermistors, or are made smaller to decrease material costs, or simply to better support a load since the support should center the weight for better support as taught in first year physics." Applicants respectfully disagree.

Element 13 of Becker et al. is disclosed as being a lead, and as clearly seen in the figure of Becker et al., the lead 13 is disposed on an upper surface of the resistor 10, **NOT** on a lower surface thereof, and extends upward, **NOT** downward. In addition, the lead 13 is **NOT** disclosed as being provided to support the resistor 10, and is clearly incapable of doing so. Furthermore, Becker et al. fails to teach or suggest any lower terminal. Thus, Becker et al. certainly fails to teach or suggest a lower terminal including the structural features recited in Applicants' claims 1 and 21. Therefore, Applicants respectfully submit that Becker et al. fails to cure the deficiencies of Camp, described above.

In spite of the Examiner's allegation that "to better support a load since the support should center the weight for better support as taught in first year physics," the Examiner is reminded that prior art rejections must be based on evidence. Graham v. John Deere Co., 383 U.S. 117 (1966). The Examiner is hereby requested to cite a reference in support of his position that it was well known at the time of Applicants' invention to provide a lower terminal of a surface-mountable PTC thermistor element which is located closer to the center of the thermistor element body than to a periphery of the thermistor element body so as to be spaced inwardly from the periphery of the

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thermistor element body.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 1 and 21 under 35 U.S.C. §102(b) as being anticipated by Camp, or in the alternative, under 35 U.S.C. § 103(a) as being obvious over Camp in view of Becker et al.

The Examiner alleged that Rehnelt "teaches all of the claimed invention except explicit mention of the electrodes (claims 1, 21), and the lower end portion of claims 1, 7, 24 and 25 (termed horizontal connection portion)." In addition, the Examiner alleged that Camp teaches electrodes for contact purposes, and that "Becker [et al.] discloses a vertical leg portion at the sole figure closer to the center of a device which would have been obvious to ensure that a load is better supported since any first year physics student would realize that the object would be better supported with the supporting structure centering the weight." Applicants respectfully disagree.

As clearly seen in Fig. 2 of Rehnelt, the lower terminal 5 includes a vertical-leg portion that is disposed much closer to a peripheral edge of the thermistor element body 3, and certainly fails to teach or suggest any vertical-leg portion of the lower terminal that "is located closer to the center of the thermistor element body than to a periphery of the thermistor body so as to be spaced inwardly from the periphery of the thermistor element body" as recited in Applicants' claims 1 and 21.

As noted above, neither Camp nor Becker et al. cures the deficiencies of Rehnelt, for the reasons described above.

Thus, none of Rehnelt, Camp and Becker et al. teaches or suggests the features of "the lower-end portion of the lower terminal is disposed in contact with the mounting surface when the surface-mountable PTC thermistor element is mounted on the mounting surface" and "said vertical-leg portion of the lower terminal is located closer to the center of the thermistor element body than to a periphery of the thermistor element body so as to be spaced inwardly from the periphery of the thermistor element body" as recited in Applicants' claim 1, or the features of "said vertical-leg portion of the lower

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terminal is located closer to the center of the thermistor element body than to a periphery of the thermistor element body so as to be spaced inwardly from the periphery of the thermistor element body" and "a lower end of said vertical-leg portion of said upper terminal is located in a common plane with a lower end of said vertical-leg portion of said lower terminal, the common plane being parallel to said top and bottom surfaces of the thermistor element body and arranged to be located at a mounting surface of a substrate upon which the surface-mountable PTC thermistor element is mounted" as recited in Applicants' claim 21.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 1 and 21 under 35 U.S.C. § 103(a) as being unpatentable over Rehneft in view of Camp and Becker et al.

Nagao et al. and Ikeda et al. were relied upon to allegedly cure various deficiencies of Camp, Becker and Rehneft. However, neither Nagao et al. nor Ikeda et al. teaches or suggests the features of "the lower-end portion of the lower terminal is disposed in contact with the mounting surface when the surface-mountable PTC thermistor element is mounted on the mounting surface" and "said vertical-leg portion of the lower terminal is located closer to the center of the thermistor element body than to a periphery of the thermistor element body so as to be spaced inwardly from the periphery of the thermistor element body" as recited in Applicants' claim 1, or the features of "said vertical-leg portion of the lower terminal is located closer to the center of the thermistor element body than to a periphery of the thermistor element body so as to be spaced inwardly from the periphery of the thermistor element body" and "a lower end of said vertical-leg portion of said upper terminal is located in a common plane with a lower end of said vertical-leg portion of said lower terminal, the common plane being parallel to said top and bottom surfaces of the thermistor element body and arranged to be located at a mounting surface of a substrate upon which the surface-mountable PTC thermistor element is mounted" as recited in Applicants' claim 21.

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Accordingly, Applicants respectfully submit that none of the prior art of record, applied alone or in combination, teaches or suggests the unique combination and arrangement of elements recited in Applicants' claims 1 and 21.

In view of the foregoing amendments and remarks, Applicants respectfully submit that claims 1 and 21 are allowable. Claims 3-10, 22 and 24-29 depend upon claims 1 and 21, and are therefore allowable for at least the reasons that claims 1 and 21 are allowable.

In view of the foregoing amendments and remarks, Applicants respectfully submit that this application is in condition for allowance. Favorable consideration and prompt allowance are solicited.

The Commissioner is authorized to charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1353.

Respectfully submitted,

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